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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/830,021

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EXAMINER

ANGEBRANNDT, MARTIN J

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/830,021	Applicant(s) FUNATO ET AL.	
	Examiner Martin J. Angebrannt	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10/15/2007, 8/26/2004 & 4/23/2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-159 is/are pending in the application.
- 4a) Of the above claim(s) 1-5 and 63-159 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-62 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-159 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/26/2004 & 4/23/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

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1. The response by the applicant has been received and made of record. The applicant has elected group III, claims 6-62. There are no arguments concerning the restriction requirement.

2. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1, 3, and 63-159, drawn to a diffraction grating; the optical head including the detectors, light sources, lenses, and the optical grating; and the disk drive, classified in class 369, subclass 100.

II. Claims 2 and 4-5, drawn to making a grating holographically where masking is used to form gratings in different areas, classified in class 359, subclass 2.5.

III. Claims 6-62, drawn to methods of duplication where the modifications are to compensate for optical aberration, classified in class 359, subclass 12.

3. The inventions are distinct, each from the other because of the following reasons:

Inventions II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make another and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product can be made using standard processes for manufacturing a diffraction grating without using the given exposure techniques.

Inventions I and III are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product. See MPEP § 806.05(h). In the instant case the product can be used in method of recording information.

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Inventions II and III are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct if they do not overlap in scope and are not obvious variants, and if it is shown that at least one subcombination is separately usable. In the instant case, subcombination II has separate utility such as when only one diffraction grating is necessary and is made using the given exposure techniques involving a two-beam interference exposure. See MPEP § 806.05(d).

The examiner has required restriction between subcombinations usable together. Where applicant elects a subcombination and claims thereto are subsequently found allowable, any claim(s) depending from or otherwise requiring all the limitations of the allowable subcombination will be examined for patentability in accordance with 37 CFR 1.104. See MPEP § 821.04(a). Applicant is advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application.

4. Because these inventions are independent or distinct for the reasons given above and there would be a serious burden on the examiner if restriction is not required because the inventions have acquired a separate status in the art in view of their different classification, restriction for examination purposes as indicated is proper.

5. Should group I be elected, there is a further species election required:

This application contains claims directed to the following patentably distinct species of the claimed invention:

Species A - fig. 8-11

Species B - fig. 12

Species C - fig. 13-21, 26

Species D - fig. 22

Species E - fig. 23

Species F - fig. 24-25

Species G - fig. 27

Species H - fig. 28

Species I - fig. 29

Species J - fig. 30

Species K - fig. 31

Species L - fig. 32

Species M - fig. 39-45

Species N - fig. 55-62

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, no claims are considered generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

6. A telephone call was made to request an oral election to the above restriction requirement, but did not result in an election being made.

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Applicant is advised that the reply to this requirement to be complete must include (i) an election of a species or invention to be examined even though the requirement be traversed (37 CFR 1.143) and (ii) identification of the claims encompassing the elected invention.

The election of an invention or species may be made with or without traverse. To reserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse.

Should applicant traverse on the ground that the inventions or species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the inventions or species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C.103(a) of the other invention.

7. Applicant's election of group III in the reply filed on 10/15/2007 is acknowledged.

Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

8. Claims 6-62 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

These claims are dependent upon a different statutory class which has been restricted from the claims under prosecution, please insert the requisite limitations of claim 1 into claims 6,7,20,21,22,23 and 26 and make these claims independent.

Claims 58 & 59 misspell - -grating- - in the last line.

The meaning of "in a lump" at the end of claims 58,59 and 62 is unclear, is this to mean that they are all exposed at once ?

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9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 6,7,24,25,46-53 and 58-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuwayama JP 60-035701, in view of Tsuji et al. '017, Kuwayama et al. '158 and Sekine et al. '579.

Kuwayama JP 60-035701 teaches a method for forming optical heads which are corrected for the wavelength difference between the recording conditions and the use in the optical head. (abstract). In figure 4a, an original holographic recording is made to form a hologram in layer 11. In figure 4b, this is contacted with a holographic recording medium bearing recording layer (21) through index matching fluid (22) and exposed using convergent light (39) to form an aberration corrected holographic element used in figure 4c. The use of a phase plate (9) in aberration correction is shown in figure 1, where both the object and reference beams pass through the phase plate. (the examiner has only had a spot, oral translation of this document, if the applicant has a translation made, the examiner would appreciate a copy with the subsequent response.)

Tsuji et al. '017 teaches diffractive optical heads where a plurality of gratings have been recorded such that the focussed beam of the laser (12a) is incident upon the recording medium and after refraction is divided into plural beams by the grating so that it forms four focused beams, each incident upon a detector.

Kuwayama et al. '158 teaches the formation of a CGH has a master hologram (35), where the parallel light is focused onto the holographic recording layer to record a hologram (32),

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where the unnecessary light is blocked by mask (35). (5/15-7/24). The use of a phase plate (9) in aberration correction is shown in figure 1, where both the object and reference beams pass through the phase plate. (figures 1 and 2)

Sekine et al. '579 teach with respect to figure 1, a CGH plate with an array of element holograms (22), which is contacted with a photosensitive layer (32) and used in a contact copying process. [0071-0076].

It would have been obvious so one skilled in the art to modify the process taught by Kuwayama JP 60-035701 to duplicate other holograms which are part of optical heads, such as the diffractive splitter of Tsuji et al. '017 with a reasonable expectation of forming the desired holographic article, based upon the prior use of contact copying in the art to form multiple gratings simultaneously as taught by Kuwayama et al. '158. Further it would have been obvious to use CGH holograms as the master based upon the teachings of Kuwayama et al. '158 and Sekine et al. '579 evidencing the prior art usage of CGH holograms in contact copying processes and the use of a CGH master to record a optical head hologram by Kuwayama et al. '158.

Particularly in view of the copying process being old and well known, relevant case law is below.

In re Albritton, 332 F.2d 379, 141 USPQ 730 (CCPA 1964) (Process of chemically reducing one novel, nonobvious material to obtain another novel, nonobvious material was claimed. The process was held obvious because the reduction reaction was old.); *In re Kanter*, 399 F.2d 249, 158 USPQ 331 (CCPA 1968) (Process of siliconizing a patentable base material to obtain a patentable product was claimed. Rejection based on prior art teaching the siliconizing process as applied to a different base material was upheld.); Cf.

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The examiner notes that the diffractive optical heads meeting the claims limitations are known and therefore not novel. The examiner also points out that in Kuwayama JP 60-035701, the hologram is for an optical head, similar to that required by the claim, so only the holographic image in Kuwayama JP 60-035701 differs from that required by the claims, so there is a strong presumption that the process of Kuwayama JP 60-035701 could be used to record other diffractive head holograms.

With respect to the claims reciting the relief hologram, the examiner holds that volume holograms has some relief character related to the diffractive image and that while that contribution is minor (~4%), it is nevertheless present.

11. Claims 6-19,24,25,46-53 and 58-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuwayama et al. JP 60-122982 , in view of Tsuji et al. '017, Kuwayama et al. '158 and Sekine et al. '579.

Kuwayama et al. JP 60-122982 teaches with respect to figure 8 a master hologram (10), which has been contacted with the holographic recording layer (50) and is exposed using light having a spherical wavefront (43) which focuses/converges at a point similar to the focal point of the desired hologram before diverging. (see pages 4). This process corrects for aberration. (abstract). (the examiner has only had a spot, oral translation of this document, if the applicant has a translation made, the examiner would appreciate a copy with the subsequent response.)

It would have been obvious so one skilled in the art to modify the process taught by Kuwayama et al. JP 60-122982 to duplicate other holograms which are part of optical heads, such as the diffractive splitter of Tsuji et al. '017 with a reasonable expectation of forming the desired holographic article, based upon the prior use of contact copying in the art to form

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multiple gratings simultaneously as taught by Kuwayama et al. '158. Further it would have been obvious to use CGH holograms as the master based upon the teachings of Kuwayama et al. '158 and Sekine et al. '579 evidencing the prior art usage of CGH holograms in contact copying processes and the use of a CGH master to record a optical head hologram by Kuwayama et al. '158.

Particularly in view of the copying process being old and well known, relevant case law is below.

In re Albertson, 332 F.2d 379, 141 USPQ 730 (CCPA 1964) (Process of chemically reducing one novel, nonobvious material to obtain another novel, nonobvious material was claimed. The process was held obvious because the reduction reaction was old.); *In re Kanter*, 399 F.2d 249, 158 USPQ 331 (CCPA 1968) (Process of siliconizing a patentable base material to obtain a patentable product was claimed. Rejection based on prior art teaching the siliconizing process as applied to a different base material was upheld.); Cf.

The examiner notes that the diffractive optical heads meeting the claims limitations are known and therefore not novel. The examiner also points out that in Kuwayama et al. JP 60-122982, the hologram is for an optical head, similar to that required by the claim, so only the holographic image in Kuwayama et al. JP 60-122982 differs from that required by the claims, so there is a strong presumption that the process of Kuwayama et al. JP 60-122982 could be used to record other diffractive head holograms.

With respect to the claims reciting the relief hologram, the examiner holds that volume holograms has some relief character related to the diffractive image and that while that contribution is minor (~4%), it is nevertheless present.

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12. Claims 6-25, 46-53 and 58-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuwayama et al. JP 60-122982, in view of Tsuji et al. '017, Kuwayama et al. '158 and Sekine et al. '579, further in view of Dickson et al., IBM Technical disclosure bulletin Vol. 24(4) pp. 1896-1897 (09/1981) and/or Kuwayama et al. '691.

Dickson et al., IBM Technical disclosure bulletin Vol. 24(4) pp. 1896-1897 (09/1981), teaches the formation of a intermediate (sub-master) hologram using a contact copying process. The reference angle can be varied in making the intermediate master. This may allow a higher quality sub-master to be formed. (page 1897). The use of a sub-master allows more final copy holograms to be formed. (page 1896).

Kuwayama et al. '691 teaches the formation of optical recording heads with correction for wavelength differences. (abstract). The intensity of the zero and first order beams should be the same (8/32-47).

To address embodiment bounded by the claims, but not disclosed/discussed above, the examiner cites Dickson et al., IBM Technical disclosure bulletin Vol. 24(4) pp. 1896-1897 (09/1981) and/or Kuwayama et al. '691 and holds that it would have been obvious to one skilled in the art to modify the processes rendered obvious by the combination of Kuwayama et al. JP 60-122982 with Tsuji et al. '017, Kuwayama et al. '158 and Sekine et al. '579, by forming an intermediate master as taught by Dickson et al., IBM Technical disclosure bulletin Vol. 24(4) pp. 1896-1897 (09/1981) and using this to form the final articles, by contact copying, as this would allow plural copies to be made simultaneously (ie there could be plural production lines, rather than just one and the sub-masters can be made of higher quality and/or it would have been obvious to one skilled in the art to modify the processes rendered obvious by the combination

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of Kuwayama et al. JP 60-122982 with Tsuji et al. '017, Kuwayama et al. '158 and Sekine et al. '579, by equalizing the intensity of the reference (transmitted zero order) and object (diffracted first order) beams as taught by Kuwayama et al. '691 in the manufacture of diffractive optical heads as this is known as desirable in the art.

13. Claims 6-25, 46-53 and 58-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuwayama et al. JP 60-122982, in view of Tsuji et al. '017, Kuwayama et al. '158 and Sekine et al. '579, further in view of Dickson et al., IBM Technical disclosure bulletin Vol. 24(4) pp. 1896-1897 (09/1981) and/or Kuwayama et al. '691, further in view of Sutherland et al. '442.

Sutherland et al. '442 teaches the formation of contact copies using polymer dispersed liquid crystalline holograms, the use of these as masters in contact copying allow the intensity of the object (diffracted first order) and reference (zero order) to be balanced by controlling the diffraction efficiency of the master electrically. (abstract)

To address embodiment bounded by the claims, but not disclosed/discussed above, the examiner cites Sutherland et al. '442 and holds that it would have been obvious to one skilled in the art to modify the processes rendered obvious by the combination of Kuwayama et al. JP 60-122982 with Tsuji et al. '017, Kuwayama et al. '158, Sekine et al. '579 combined with Dickson et al., IBM Technical disclosure bulletin Vol. 24(4) pp. 1896-1897 (09/1981) and/or Kuwayama et al. '691 by using PDLC holograms as the master holograms to allow for easy adjustment of the relative intensities of the zero and first order beams the exposure of which produce the final copy.

14. Claims 6-25 and 46-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuwayama et al. JP 60-122982, in view of Tsuji et al. '017, Kuwayama et al. '158 and Sekine et

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al. '579, further in view of Dickson et al., IBM Technical disclosure bulletin Vol. 24(4) pp. 1896-1897 (09/1981) and/or Kuwayama et al. '691, further in view of Watanabe et al '637.

Watanabe et al '637 shows contact copying processes in figures 3 and 8a, which are disclosed as used with the mask of figure 9a to form the master shown in figure 9b, which is then used to form duplicates shown in figure 9c. Clearly to form the multiple holograms shown in figure 9b, from the single hologram shown in figure 9a, the medium or the mask would have to be stepped/translated in two directions.

To address embodiment bounded by the claims, but not disclosed/discussed above, the examiner cites Watanabe et al '637 and holds that it would have been obvious to one skilled in the art to modify the processes rendered obvious by the combination of Kuwayama et al. JP 60-122982 with Tsuji et al. '017, Kuwayama et al. '158, Sekine et al. '579 combined with Dickson et al., IBM Technical disclosure bulletin Vol. 24(4) pp. 1896-1897 (09/1981) and/or Kuwayama et al. '691 by forming an intermediate master having plural holographic patterns thereon from the initial master by performing multiple contact exposures with translation of the mask or the photosensitive material to as taught by Watanabe et al '637 to increase the number of holograms able to be produced in a single step.

15. Claims 6-53 and 58-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuwayama et al. JP 60-122982 , in view of Tsuji et al. '017, Kuwayama et al. '158 and Sekine et al. '579, further in view of Dickson et al., IBM Technical disclosure bulletin Vol. 24(4) pp. 1896-1897 (09/1981) and/or Kuwayama et al. '691, further in view of Satoh et al. '480.

Satoh et al. '480 teaches with respect to figure 5, an original hologram (70), which is separated from a holographic recording medium (84) by a first lens (76), an aperture which

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allows passage of only the zero And first order beams (80) and a second lens (82). The use of the light modulation coupled wit the motor spinning/translating the holographic recording medium provides copies of the original in different portions of the holographic recording medium.

To address embodiment bounded by the claims, but not disclosed/discussed above, the examiner cites Satoh et al. '480 and holds that it would have been obvious to one skilled in the art to modify the processes rendered obvious by the combination of Kuwayama et al. JP 60-122982 with Tsuji et al. '017, Kuwayama et al. '158, Sekine et al. '579 combined with Dickson et al., IBM Technical disclosure bulletin Vol. 24(4) pp. 1896-1897 (09/1981) and/or Kuwayama et al. '691 by using other old and well known holographic duplication methods, such as that of Satoh et al. '480 which allows multiple holograms to be recorded from a single master into different portions of the holographic recording media.

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

References not applied concern related holographic duplication processes.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J. Angebrannndt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Martin J Angebranndt/
Primary Examiner, Art Unit 1795

Martin J Angebranndt
Primary Examiner
Art Unit 1795

2/28/2008